Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1). (Currently Amended) A method, comprising:

using hardware and software to perform performing repeatedly continuous edge profiling

on a program;

detecting profile phase transitions continuously repeatedly; and

optimizing the program based upon the profile phase transitions and edge profile.

2). (Currently Amended) The method of claim 1, wherein performing repeatedly edge

profiling using hardware and software comprises:

using software to insert edge profiling instructions and arrange profile data;

executing the program; and

using hardware to update profile phase transitions, and signal phase transitions.

3). (Original) The method of claim 2, wherein using software to insert profiling

instructions comprises modifying branch instructions to assign an identifier to one or

more profiled edges, and to assign a value to an edge selection field.

4). (Currently Amended) The method of claim 3, wherein using software to insert profiling

instructions further comprises inserting a profile identifier instruction when the profiled edge does

not have lacks at least one of a branch instruction; an initialize profile instruction; and a set offset

instruction.

5). (Original) The method of claim 2, wherein using hardware comprises translating edge

profiling instructions into profile update operations.

6). (Original) The method of claim 4, further comprising:

loading a profile information register with a base address, an offset value, a trigger-

counter, and a flag.

7). (Original) The method of claim 5, further comprising:

intercepting with hardware the profiling instructions;

generating a profile update operation; and

updating profile counters.

8). (Currently Amended) The method of claim 1, wherein detecting profile phase transitions

~~continuously~~ repeatedly, comprises generating an interrupt signal by the hardware when the

profile phase transition occurs.

9). (Original) The method of claim 8, further comprising:

determining if a program edge is hot, comprising

determining if the profiling instruction is executed, and

updating profiling counters associated with the profiling instruction;

determining if a cold edge becomes a hot edge, comprising

incrementing and decrementing trigger counters, and

detecting if trigger counters overflow and underflow;

preventing a false phase transition by detecting trigger counters underflow.

10). (Currently Amended) A system, comprising:

a processor pipeline ~~configured~~ to generate a profile ID for each profiled edge, and generate

profile update operations;

a profile information register coupled to the processor pipeline;

a first logic device ~~configured~~ to accept the profile update operations and profile ID to generate a

memory buffer address;

a profile cache ~~for accepting~~ to accept the buffer address connected to the first logic device; and

a second logic device ~~connected~~ coupled to the profile cache configured to generate a phase

transition interrupt signal,

wherein the system performs edge profiling on a program, detects profile phase transitions

~~continuously~~ repeatedly, and optimizes the program based upon the profile phase

transitions.

11). (Original) The system of claim 10, wherein the processor pipeline

executes the program;

intercepts profiling instructions and updates profile counters; and

updates profile phase transition trigger counters, and

signals phase transitions.

12). (Original) The system of claim 11, wherein the software inserts edge profiling

instructions for modifying branch instructions to assign an identifier to one or more profiled

edges, and to assign a value to an edge selection field.

13). (Original) The system of claim 12, wherein the software while inserting edge profiling

instructions, also inserts a profile identifier instruction when the profiled edge does not have a

branch instruction; an initialize profile instruction; and a set offset instruction.

14). (Original) The system of claim 11, wherein the processor translates edge profiling

instructions into profile update operations.

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15).   (Original) The system of claim 13, wherein the processor pipeline loads a profile

information register with a base address, an offset value, a trigger-counter, and a flag.

16).   (Original) The system of claim 14, wherein the processor pipeline:

intercepts the profiling instructions;

generates a profile update operation; and

updates profile counters.

17).   (Original) The system of claim 10, wherein the logic device generates an interrupt signal

when the profile phase transition occurs.

18).   (Currently Amended) The system of claim 17, wherein the processor:

determines if a program edge is hot, by determining if the profiling instruction is executed,

updating profile counters associated with the profiling instruction, and determining if the

trigger counters overflow;

determines if a cold edge becomes a hot edge, comprising

incrementing and decrementing trigger counters, ~~and~~

detecting if trigger counters overflow and underflow;

~~preventing~~ prevents a false phase transition by detecting trigger counters underflow.

19).   (Currently Amended) A computer-readable medium having stored thereon a plurality of

instructions, said plurality of instructions when executed by a computer, cause said computer to

perform:

~~using hardware and software to perform continuous~~ performing repeatedly edge profiling

on a program;

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detecting profile phase transitions ~~continuously~~ repeatedly; and

optimizing the program based upon the profile phase transitions and edge profile.

20).   (Original) The computer-readable medium of claim 19 having stored thereon additional

instructions, said additional instructions when executed by a computer for using hardware and

software to perform edge profiling on a program, cause said computer to further perform:

using software to insert edge profiling instructions and arrange profile data;

executing the program; and

using hardware to update profile phase transitions, and signal phase transitions.

21).   (Original) The computer-readable medium of claim 20 having stored thereon additional

instructions, said additional instructions when executed by a computer for using software to insert

edge profiling instructions, cause said computer to further perform:

modifying branch instructions to assign an identifier to one or more profiled

edges, and to assign a value to an edge selection field.

22).   (Original) The computer-readable medium of claim 21 having stored thereon additional

instructions, said additional instructions when executed by a computer for using software to insert

edge profiling instructions, cause said computer to further perform:

inserting a profile identifier instruction; when the profiled edge does not have a

branch instruction, an initialize profile instruction, and a set offset

instruction.

23).   (Original) The computer-readable medium of claim 20, having stored thereon additional

instructions, said additional instructions when executed by a computer for using hardware, cause

said computer to further perform translating edge profiling instructions into profile update

operations.

24). (Original) The computer-readable medium of claim 22 having stored thereon additional

instructions, said additional instructions when executed by a computer, cause said computer to

further perform:

loading a profile information register with a base address, an offset value, a

trigger-counter, and a flag.

25). (Original) The computer-readable medium of claim 23 having stored thereon additional

instructions, said additional instructions when executed by a computer, cause said computer to

further perform:

intercepting with the hardware the profiling instructions;

generating a profile update operation; and

updating profile counters.

26). (Currently Amended) The computer-readable medium of claim 19 having stored thereon

additional instructions, said additional instructions when executed by a computer for detecting

profile phase transitions ~~continuously~~ repeatedly, cause said computer to further perform:

generating an interrupt signal by the hardware when the profile phase transition occurs.

27). (Currently Amended) The computer-readable medium of claim 26 having stored thereon

additional instructions, said additional instructions when executed by a computer for detecting

profile phase transitions ~~continuously~~ repeatedly, cause said computer to further perform:

determining if a program edge is hot, comprising

determining if the profiling instruction is executed, and

updating profile counters associated with the profiling instruction;

determining if a cold edge becomes a hot edge, comprising

incrementing or decrementing trigger counters, and

detecting if trigger counters overflow and underflow; and

preventing a false phase transition by detecting trigger counters underflow.